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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KIM, TAE JUN	

ART UNIT	PAPER NUMBER
3746	

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/682,227	HARDWICKE ET AL.	
	Examiner	Art Unit	
	Ted Kim	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-24 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 12/27/2005 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed 12/27/2005 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: first, it is noted that each of the porosities of the three different discs were amended to be different. The original filed specification does not provide support for such an amendment. While applicant has support for a plurality of discs, a compliant amendment must be in accordance with the scope of the original disclosure. Support for the use of plurality of discs comes from claim 11 and paragraph 0037, the original filed specification does not provide that each of the three discs have differing porosities.

Applicant is required to cancel the new matter in the reply to this Office Action.

Drawings

2. The replacement sheets filed 12/27/2005 have been received but have not been entered because they would constitute new matter as addressed above in the amendment to the specification and also because they do not illustrate **discs**. Note the casing is cylindrical, the discs should be cylindrical along the casing.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features of claim 11,

multiple discs of different porosities must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-4, 6, 7, 12, 13, 20, 21, 23, 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsuyama et al (6,920,758). Matsuyama et al teach a combustor and a combustor cap liner assembly, comprising: a combustor having a combustor casing and a combustion liner within the combustor casing, wherein the combustion liner is closed at a forward end by the combustor liner cap assembly, the combustor including a cellular solid media 34 (Fig. 1) or 40 (Fig. 2) disposed within the combustor liner cap assembly and/or between the combustion liner cap assembly and an end cover to the combustor; comprising the cellular solid media in the combustion liner cap assembly is disposed about at least one burner tube 14 extending through the combustion liner cap assembly; wherein the cellular solid media comprises at least a ceramic material, a metallic material, or a combination thereof (col. 6, lines 3+); wherein the cellular solid media comprises an open cell metal foam media, an open cell ceramic foam media, a closed cell foam, a reticulated foam having both closed cells and open cells, a lattice block structure, or a cellular alloy; wherein the cellular solid media comprises a metal alloy (e.g. steel or stainless steel) and/or superalloy material; wherein the metal alloy and or super alloy comprises a metal selected from the group consisting of chrome, aluminum, cobalt, nickel, iron, tungsten, molybdenum, and titanium; wherein the cellular solid media disposed within the combustor liner cap assembly and/or between the

combustion liner cap assembly and the end cover comprises a single disc (Fig. 2); wherein the cellular solid media comprises a ceramic material.

6. Claim 1, 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Andersson et al (6,106,278). Andersson et al teach a combustor and a combustor cap liner assembly, comprising: a combustor having a combustor casing and a combustion liner 3 within the combustor casing, wherein the combustion liner is closed at a forward end by the combustor liner cap assembly, the combustor including a cellular solid media (honeycomb 18') disposed within the combustor liner cap assembly and/or between the combustion liner cap assembly and an end cover 4 to the combustor; comprising the cellular solid media in the combustion liner cap assembly is disposed about at least one burner tube 7 extending through the combustion liner cap assembly.

7. Claims 1, 3, are rejected under 35 U.S.C. 102(b) as being anticipated by Schelp (4,081,958). Schelp teaches a combustor and a combustor cap liner assembly, comprising: a combustor having a combustor casing 24 and a combustion liner 22 within the combustor casing, wherein the combustion liner is closed at a forward end by the combustor liner cap assembly 32, the combustor including a cellular solid media 36 disposed within the combustor liner cap assembly and/or between the combustion liner cap assembly and an end cover to the combustor; wherein the cellular solid media comprises at least a ceramic material (col. 2, lines 35+), a metallic material, or a combination thereof; wherein the cellular solid media disposed within the combustor liner cap assembly and/or between the combustion liner cap assembly and the end cover

comprises a single disc; wherein the cellular solid media comprises a ceramic material; wherein the cellular solid media comprises a ceramic material comprising silica, alumina, zirconia, ytrria stabilized zirconia, or combinations comprising at least one of the foregoing.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-4, 6-11, 13, 14, 20, 21, 23, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-062549 in view of Brown et al (2003/00118762). JP '549 teach combustor and a combustor cap liner assembly, comprising: a combustor having a combustor casing and a combustion liner within the combustor casing, wherein the combustion liner is closed at a forward end by the combustor liner cap assembly, the combustor including a noise/vibration absorbing media 14 or 15 with different porosities disposed within the combustor liner cap assembly and/or between the combustion liner cap assembly and an end cover to the combustor; comprising the cellular solid media in the combustion liner cap assembly is disposed about at least one burner tube 3 extending through the combustion liner cap assembly; wherein the vibration absorbing media includes multiple disks. Due to lack of translation, it is not clear whether JP '549 use a

cellular structure for the noise/vibration absorbing media. Brown et al teach a noise/vibration absorbing media used in turbine applications using a cellular structure (see e.g. Fig. 8) made of the claimed materials and porosity (page 2, end of paragraph 17; page 4, paragraph 31). Furthermore, it would seem inherent that materials having the claimed porosity would also have the claimed range of density (which is determined by the porosity). Alternately, this is regarded as being within the ordinary skill in the art as being an obvious matter of finding the workable ranges in the art. It would have been obvious to one of ordinary skill in the art to employ the noise/vibration reduction media taught by Brown et al, in order to enhance the noise/vibration reduction desired by JP '549. It would have been obvious to one of ordinary skill in the art to employ the claimed ranges as being a material property of the claimed materials or as an obvious matter of finding the workable ranges in the art.

10. Claims 4, 8-10, 13, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuyama et al (6,920,758) in view of Brown et al (2003/00118762) and/or Schelp (4,081,958). Matsuyama et al teach using a solid cellular material in the claimed location but do not teach using a foam or the specific ceramic materials claimed. However, Brown et al teach a noise/vibration absorbing media used in turbine applications using a cellular structure (see e.g. Fig. 8) made of the claimed materials and porosity (page 2, end of paragraph 17; page 4, paragraph 31). Alternately, this is regarded as being within the ordinary skill in the art as being an obvious matter of finding the workable ranges in the art. It would have been obvious to one of ordinary skill in the art to employ the

noise/vibration reduction media taught by Brown et al, in order to enhance the noise/vibration reduction desired by JP '549. It would have been obvious to one of ordinary skill in the art to employ the claimed ranges as being a material property of the claimed materials or as an obvious matter of finding the workable ranges in the art. Furthermore, it would seem inherent that materials having the claimed porosity would also have the claimed range of density (which is determined by the porosity). Alternately, Schelp teaches the claimed ceramic material (col. 2, lines 35+). It would have been obvious to one of ordinary skill in the art to employ the ceramic materials of Brown et al and/or Schelp as well know materials used in the noise reduction art for gas turbine applications.

11. Claims 1-4, 6-10, 12-16, 18-21, 23, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fitts (5,274,991) in view of Zink, Jr et al (2,964,121) and further in view of either Brown et al or Matsuyama et al (6,920,758). Fitts teaches the claimed combustor and a combustor cap liner assembly comprising: a combustor having a combustor casing and a combustion liner 38 within the combustor casing, wherein the combustion liner is closed at a forward end by the combustor liner cap assembly, the combustion liner cap assembly a space defined by opposing surfaces of a circular plate, a burner tube 96, and an effusion plate 70, 72 (Fig. 6) of the combustion liner cap assembly. Fitts does not teach noise attenuation in the combustor cap area. It is well known that such a combustor design suffers from noise/vibration issues in that region as taught by Dean et al of the IDS. Zink, Jr et al is cited as teaching reference to show that

it is old and well known in the art to employ noise insulation 48 in the air inflow region (see Fig. 2) about the burner tube. It would have been obvious to one of ordinary skill in the art to employ noise insulation in the region of the burner tubes of Fitts, i.e. in the combustor cap, in order to attenuate the noise. Fitts does not teach the solid cellular material. Matsuyama et al teach a combustor and a combustor cap liner assembly, comprising: a combustor having a combustor casing and a combustion liner within the combustor casing, wherein the combustion liner is closed at a forward end by the combustor liner cap assembly, the combustor including a cellular solid media 34 (Fig. 1) or 40 (Fig. 2) disposed within the combustor liner cap assembly and/or between the combustion liner cap assembly and an end cover to the combustor; comprising the cellular solid media in the combustion liner cap assembly is disposed about at least one burner tube 14 extending through the combustion liner cap assembly; wherein the cellular solid media comprises at least a ceramic material, a metallic material, or a combination thereof (col. 6, lines 3+); wherein the cellular solid media comprises an open cell metal foam media, an open cell ceramic foam media, a closed cell foam, a reticulated foam having both closed cells and open cells, a lattice block structure, or a cellular alloy; wherein the cellular solid media comprises a metal alloy (e.g. steel or stainless steel) and/or superalloy material; wherein the metal alloy and or super alloy comprises a metal selected from the group consisting of chrome, aluminum, cobalt, nickel, iron, tungsten, molybdenum, and titanium; wherein the cellular solid media disposed within the combustor liner cap assembly and/or between the combustion liner cap assembly and the

end cover comprises a single disc (Fig. 2); wherein the cellular solid media comprises a ceramic material. Brown et al teach a noise/vibration absorbing media used in turbine applications using a solid cellular structure (see e.g. Fig. 8) made of the claimed materials and porosity (page 2, end of paragraph 17; page 4, paragraph 31). Furthermore, it would seem inherent that materials having the claimed porosity would also have the claimed range of density (which is determined by the porosity). Alternately, this is regarded as being within the ordinary skill in the art as being an obvious matter of finding the workable ranges in the art. It would have been obvious to one of ordinary skill in the art to employ the noise/vibration reduction media taught by either Matsuyama et al or Brown et al, in order to facilitate the reduction of noise about the burner tubes.

12. Claims 4, 5, 17, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of the above applied art in view of Gettle et al (5,394,786). The prior art do not teach the use of aerogels and some of them do not teach the use of foams. Gettle et al teach that aerogels (col. 15, lines 4+) and foams are well known for replacing other noise attenuation mediums in noise reduction applications in gas turbine engines (col. 19, lines 48+). It would have been obvious to one of ordinary skill in the art to employ aerogels and/or foams, in order to enhance the noise reduction of the gas turbine combustors of the prior art.

Response to Arguments

13. Applicant's arguments filed 12/27/2005 have been fully considered but they are not persuasive. Applicant's arguments fail to comply with 37 CFR 1.111(b) because they

amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. In each case, applicant's central argument is an allegation that the applied references do not teach a combustor having a combustion liner cap assembly. Applicant provides no reasoning as to why each of the applied combustors cannot be deemed to comprise a combustor having a combustion liner cap assembly when each of the applied references clearly employs a combustor liner and a cap assembly that closes off one end of the combustor. Note that Webster's New Dictionary and Thesaurus, concise edition, 1990 defines "cap" as "a cover; a top –vt to cover (the end of)." Applicant's allegations hence do not defined over the art of record which structurally teach the claimed limitations.

14. Applicant's arguments with regard to Matsuyama et al are not persuasive. Applicant argues that Matsuyama et al has plates with holes and does not have a cellular media. However, applicant is misdirected as the broad definition of "cellular solid material" on page 3, paragraph [0018], lines 1-3 covers "an interconnected network of solid struts or plates, which form the edges and faces of cells." The plates of Matsuyama et al clearly form the edges and faces of cells and thus meet the broad definition recited. Moreover, applicant ignores the other embodiment of Matsuyama et al 40 (Fig. 2) where the cellular media is clearly taught. In addition, each of the other applied references meet at least the broad definition of "cellular solid material" provided in the specification.

15. With regard to the 103 rejection of Fitts (5,274,991) in view of Zink, Jr et al (2,964,121) and further in view of either Brown et al or Matsuyama et al (6,920,758), applicant's arguments regarding Matsuyama et al are again deficient for the reasons set froth above and the arguments fail to take into account that it is well known that such a combustor design suffers from noise/vibration issues in that region as taught by Dean et al of the IDS. Hence, one of ordinary skill in the art would be motivated to provide a cellular media to absorb noise in the combustor cap region of Fitts, as this is an area that suffers from noise/vibration and/or because Zink, Jr et al also teach the issue of providing noise insulation at the region of the inlet air for the burners. Note that even the reversing airflow pattern of Zink at the inlet is analogous to reversing airflow for the inlet air of Fitts et al. Hence, the Brown reference was applied because it teaches the specific types of noise reduction materials used in gas turbines, their specific location being already taught by the other references.

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax numbers for the organization where this application is assigned are 571-273-8300 for Regular faxes and 571-273-8300 for After Final faxes.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thorpe, can be reached at 571-272-4444.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose telephone number is 703-308-0861. General inquiries can also be directed to the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at http://www.uspto.gov/main/patents.htm

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